

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(PRESS MAIL MAILING LABEL)

(19) World Intellectual Property  
Organization  
International Bureau



29 APR 2005

D. EV630987155US

(43) International Publication Date  
21 May 2004 (21.05.2004)

PCT

(10) International Publication Number  
WO 2004/042458 A1

(51) International Patent Classification<sup>7</sup>: G02F 1/01,  
G02B 6/14, 6/12

(21) International Application Number:  
PCT/US2003/034577

(22) International Filing Date: 30 October 2003 (30.10.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/422,414 30 October 2002 (30.10.2002) US  
60/478,751 16 June 2003 (16.06.2003) US

(71) Applicants: MASSACHUSETTS INSTITUTE OF  
TECHNOLOGY [US/US]; 77 Massachusetts Avenue,  
Cambridge, MA 02139 (US). PIRELLI & C. S.p.A.  
[IT/IT]; Via Gaetano Negri, 10. 20123 Milano (IT).

(71) Applicants and

(72) Inventors: CHERCHI, Matteo [IT/IT]; c/o Pirelli Labs  
S.p.A., Viale Sarca, 222, 20126 Milano (IT). WATTS,  
Michael, R. [US/US]; 2 Eastgate Lane, Hingham, MA  
02043 (US).

(72) Inventor: HAUS, Hermann, A. (deceased).

(74) Agents: CONNORS, Matthew, E. et al.; Samuels,  
Gauthier & Stevens LLP, Suite 3300, 225 Franklin Street,  
Boston, MA 02110 (US).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,  
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,  
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,  
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,  
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,  
MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC,  
SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA,  
UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

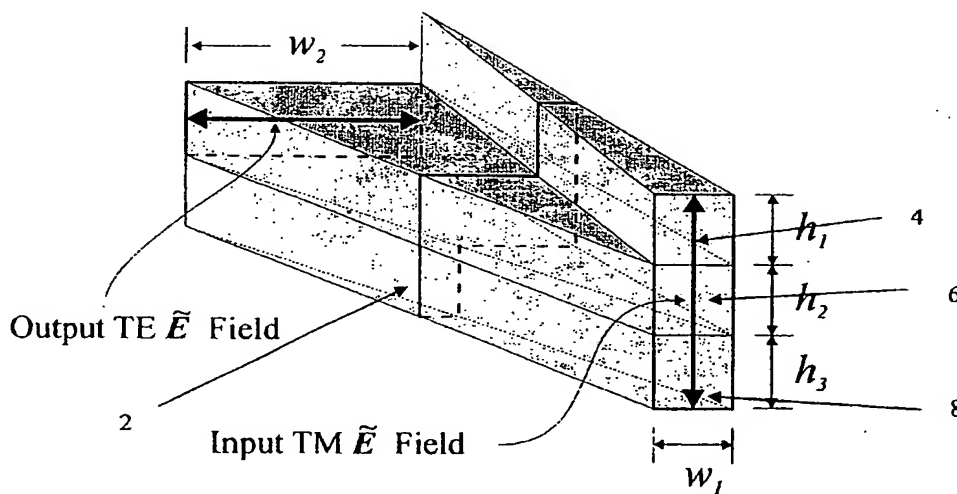
(84) Designated States (*regional*): ARIPO patent (BW, GH,  
GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),  
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,  
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE,  
SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA,  
GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the  
claims and to be republished in the event of receipt of  
amendments

For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.

(54) Title: AN INTEGRATED OPTIC POLARIZATION CONVERTER BASED ON STRUCTURAL CHIRALITY



(57) **Abstract:** An integrated optic polarization converter includes a plurality of core layers used to approximate a gradually twisted waveguide and therein adiabatically transform a propagating mode from an initial polarization state to a different final polarization state.

WO 2004/042458 A1